

ABSTRACT

The invention provides structure and method for achieving a uniformly polished or planarized substrate such as a semiconductor wafer including achieving substantially uniform polishing between the center of the semiconductor wafer and the edge of the wafer. In one aspect the invention provides a polishing apparatus including a housing, a carrier for mounting a substrate to be polished, a retaining ring circumscribing the carrier for retaining the substrate, a first coupling attaching the retaining ring to the carrier such that the retaining ring may move relative to the carrier, a second coupling attaching the carrier to the housing such that the carrier may move relative to the housing, the housing and the first coupling defining a first pressure chamber to exert a pressure force against the retaining ring, and the housing and the second coupling defining a second pressure chamber to exert a pressure force against the subcarrier. In one embodiment, the couplings are diaphragms. The invention also provides a retaining ring having a special edge profile that assists in smoothing and pre compressing the polishing pad to increase polishing uniformity. A method for polishing and a semiconductor wafer made using the polishing method are also provided.